

# Claims

- [c1] 1. A rapid thermal annealing process ("RTA") for a first RTA equipment, wherein the first RTA equipment has a pyrometer providing for measuring a temperature of the RTA process, the RTA process comprising the following steps:
- proceeding a first rapid thermal annealing ("RTA") step to a wafer in the first RTA equipment;
- comparing a measured value of an operation parameter with a reference range of value of the operation parameter; and
- proceeding a second RTA step to the wafer in the first RTA equipment when the measured value of the operation parameter is in between the reference range of value of the operation parameter.
- [c2] 2. The RTA process of claim 1, wherein the first RTA equipment is turned off when the measured value of the operation parameter is out of the reference range of value of the operation parameter.
- [c3] 3. The RTA process of claim 2, wherein a second RTA equipment comprises for the RTA process, which further comprises unloading the wafer from the first RTA equip-

ment and loading the wafer into the second RTA equipment after the first RTA equipment is turned off, in order to complete the RTA process of the wafer.

- [c4] 4. The RTA process of claim 1, wherein the operation parameter comprises a temperature measured by the pyrometer.
- [c5] 5. The RTA process of claim 1, wherein the operation parameter comprises a power provided by the first RTA equipment.
- [c6] 6. The RTA process of claim 1, wherein an operation time of the first RTA step and an operation time of the second RTA step comprise, wherein the operation time of the first RTA step is less than the operation time of the second RTA step.
- [c7] 7. The RTA process of claim 1, wherein an operation temperature of the first RTA step and an operation temperature of the second RTA step comprise, wherein the operation temperature of the first RTA step is equal to the operation temperature of the second RTA step.
- [c8] 8. A rapid thermal annealing ("RTA") process for a first RTA equipment, wherein the first RTA equipment has a pyrometer providing for measuring a temperature of the RTA process, the RTA process comprising the following

steps:

loading a wafer into a reaction chamber of the first rapid thermal annealing ("RTA") equipment;

proceeding a hold temperature step to maintain the reaction chamber at a first temperature;

proceeding a first ramp up step to ramp up the first temperature to a second temperature of the reaction chamber;

proceeding a stable temperature step to maintain the reaction chamber at the second temperature;

proceeding a second ramp up step to ramp up the second temperature to a main process temperature of the reaction chamber;

processing a first RTA step to the wafer by maintaining the reaction chamber at the main process temperature;

comparing a measured value of an operation parameter with a reference range of value of the operation parameter; and

proceeding a second RTA step to the wafer by maintaining the reaction chamber at the main process temperature when the measured value of the operation parameter is in between the reference range of value of the operation parameter; and

proceeding a cool down step to cool down the main process temperature to the first temperature of the reaction chamber.

- [c9] 9. The RTA process of claim 8, wherein the first RTA equipment is turned off when the measured value of the operation parameter is out of the reference range of value of the operation parameter.
- [c10] 10. The RTA process of claim 9, wherein a second RTA equipment for the RTA process comprises, wherein unloading the wafer from the first RTA equipment and loading the wafer into the second RTA equipment after the first RTA equipment is turned off comprise, in order to complete the RTA process of the wafer.
- [c11] 11. The RTA process of claim 8, wherein the operation parameter comprises a temperature measured by the pyrometer.
- [c12] 12. The RTA process of claim 8, wherein the operation parameter comprises a power provided by the first RTA equipment.
- [c13] 13. The RTA process of claim 8, wherein further comprises an operation time of the first RTA step and an operation time of the second RTA step, wherein the operation time of the first RTA step is less than the operation time of the second RTA step.
- [c14] 14. The RTA process of claim 8, wherein further com-

prises an operation temperature of the first RTA step and an operation temperature of the second RTA step, wherein the operation temperature of the first RTA step is equal to the operation temperature of the second RTA step.